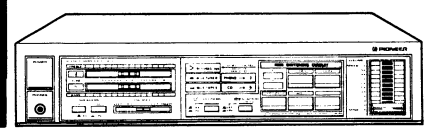
PIONEER®

Service Manual

CIRCUIT DESCRIPTIONS
REPAIR & ADJUSTMENTS



ORDER NO.
ARP1109-0

STEREO AMPLIFIER

SA-970(BK)
SA-970

MODEL SA-970 [BK] COMES IN SEVEN VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Applicable model		Power requirement	Destination
	SA-970 (BK)	SA-970		
HE	○	○	AC220V, 240V (switchable) *	European continent
HB	○	○	AC220V, 240V (switchable) *	United Kingdom
HEZ	○	○	AC220V, 240V (switchable) *	West Germany
S	○	–	AC110V, 120V, 220V, 240V (switchable)	General market
S/G	○	–	AC110V, 120V, 220V, 240V (switchable)	U.S. Military
YP	○	–	AC240V only	Australia
KC	○	–	AC120V only	Canada

*Change the primary wiring of the power transformer.

- This service manual is applicable to the HE type.
- As to the other types, please refer to additional service manual.

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1. SPECIFICATIONS

Amplifier Section

Continuous average power output is 70 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.08% total harmonic distortion.

Continuous Power Output (both channels driven)
- T.H.D. 0.08%, 1 kHz, 8 Ω ..... 82 W per channel
- T.H.D. 0.08%, 20 Hz to 20 kHz, 8 Ω ..... 70 W per channel

DIN, Continuous Power Output at 1 kHz (both channels driven)
- T.H.D. 1%, 1 kHz, 8 Ω ..... 87 W per channel

Input (Sensitivity/Impedance)
- PHONO ..... 2.5 mV/50 kΩ
- TUNER, CD, TAPE PLAY ADAPTOR IN, VIDEO/AUX ..... 150 mV/50 kΩ

Phono Overload Level (T.H.D. 0.01%, 1 kHz) ..... 150 mV

Output (Level/Impedance)
- TAPE REC, ADAPTOR OUT ..... 150 mV/2.2 kΩ
- Headphone ..... 67 mV/8 Ω

Frequency Response
- PHONO (RIAA Equalization) ..... 20 Hz to 20 kHz ±0.3 dB
- TUNER, CD, ADAPTOR IN, TAPE PLAY, VIDEO/AUX ..... 10 Hz to 70 kHz $^{+1}_{-3}$ dB

Tone Control
- BASS ..... ±10 dB (100 Hz)
- TREBLE ..... ±10 dB (10 kHz)

Loudness Contour(Volume control set at −40 dB position)
- 100 Hz ..... +6 dB
- 10 kHz ..... +3 dB

Hum and Noise (IHF, short circuited, A network)
- PHONO ..... 81 dB
- CD, ADAPTOR IN, TUNER, VIDEO/AUX, TAPE PLAY ..... 102 dB

Hum and Noise (DIN, continuous power / 50 mW)
- PHONO ..... 70 dB/60 dB
- CD, ADAPTOR IN, TUNER, VIDEO/AUX, TAPE PLAY ..... 88 dB/62 dB

Speaker Load Impedance
- A or B ..... 6 – 16 Ω
- A + B ..... 6 – 16 Ω

Miscellaneous

Power Requirements
- European model ..... a.c. 220 V ~, 50/60 Hz
- U.K., Australian models ..... a.c. 240 V ~, 50/60 Hz
- Canadian models ..... AC 120V, 60 Hz
- Other destination models ..... ~AC 110 V/120 V/220 V/240 V (switchable), 50/60 Hz

Power Consumption
- European, U.K., Australian models ..... 510 W
- Canadian model ..... 380 VA (CSA)
- Other destination models ..... 200 W

Dimensions ..... 420 (W) x 98 (H) x 273 (D) mm
16-1/2 (W) x 3-7/8 (H) x 10-3/4 (D) in

Weight (without package) ..... 6.6 kg (14 lb 9 oz)

Furnished Parts

Operating Instructions 1

NOTE:
- *Specifications and design subject to possible modification without notice due to improvements.*
- **Measured pursuant to the Federal Trade Commission's Trade Regulation rule on Power Claims for Amplifier.*

2. FRONT PANEL FACILITIES

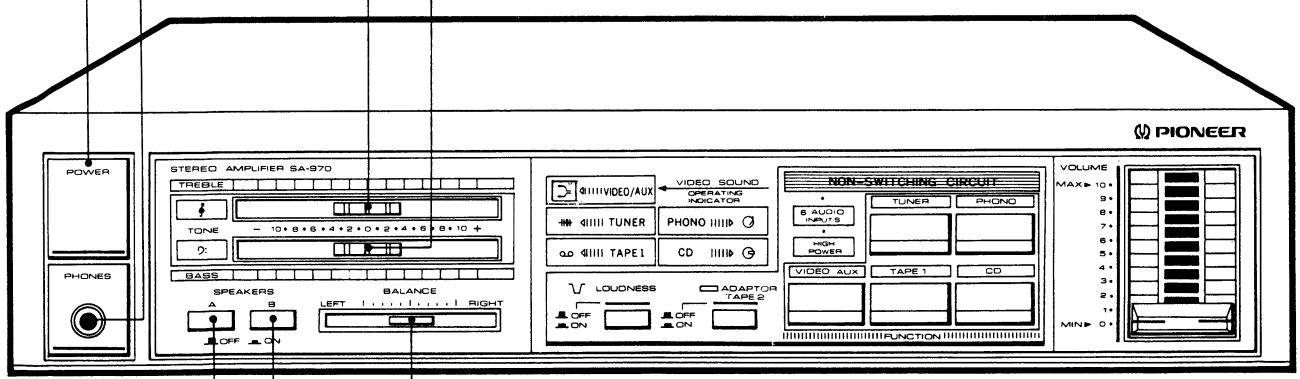
Indications on the actual unit may differ from those in the illustration. However, operating procedures are the same.

POWER switch
Press to turn power to the unit ON and OFF.

PHONES jack
When using headphones, insert their plug into this jack.

TREBLE tone control
Use to adjust the high-frequency tone.
The central "0" position is the flat (normal) position. When moved to the right, high-frequency tones are emphasized; when moved to the left, high-frequency tones are de-emphasized.

BASS tone control
Use to adjust the low-frequency tone. The central "0" position is the flat (normal) position. When moved to the right, low-frequency tones are emphasized; when moved to the left, low-frequency tones are de-emphasized.



SPEAKERS A selector switch
Use this switch to listen to the speaker systems connected to the SPEAKERS A terminals.
[ON] — Depressed position: Sound is heard from speaker systems.
[OFF] — Released position: No sound is heard from speaker systems. Set to this position when listening with headphones.

SPEAKERS B selector switch
Use this switch to listen to the speaker systems connected to the SPEAKERS B terminals.
[ON] — Depressed position: Sound is heard from the speaker systems.
[OFF] — Released position: No sound is heard from the speaker systems. Set to this position when listening with headphones.

BALANCE control
Should normally be left in the center position. Adjust balance if the sound is louder from one of the speakers. If the right side is louder, move toward the LEFT position and if the left side is louder, move toward the RIGHT position.

NOTE:
When the speaker system is connected to only one speaker terminal (A or B) and both A and B selector switches are ON, there will be no sound. Turn ON only the selector to which the speaker system is connected.

Indicators

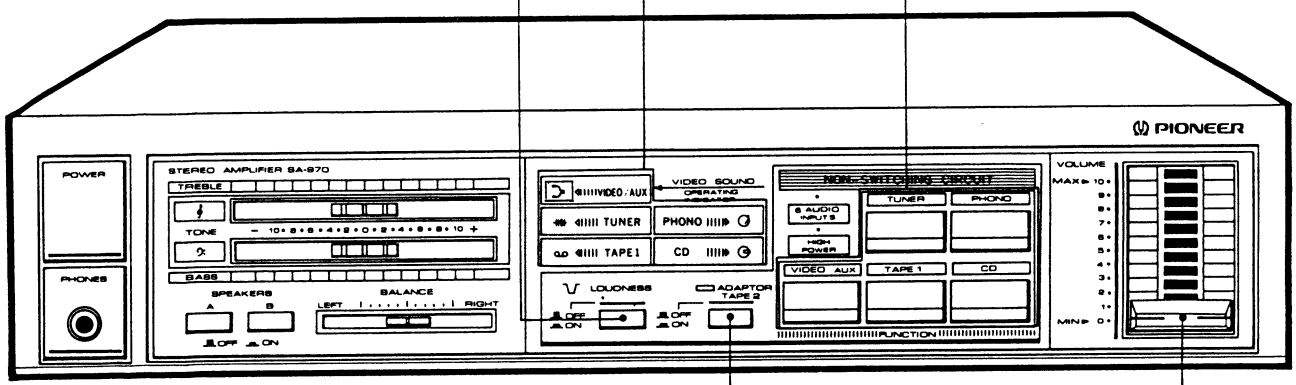
The indicators light to show the positions of the FUNCTION switches.

FUNCTION switches

Use to select playback source.
[PHONO] — Press when listening to record playback on a turntable.
[TUNER] — Press when listening to AM or FM broadcasts with a tuner.
[CD] — Press when listening to a compact disc playback with a CD player.
[TAPE 1] — Press when listening to tape playback with a tape deck.
[VIDEO/AUX] — Press when listening to programs from a component connected to the VIDEO/AUX terminals.
NOTE:
Function switches should be pressed firmly; otherwise, all the function indicators will light, and no output will be produced. If this occurs, press the desired function switch again.

LOUDNESS switch

Use when listening at low volume levels.
[OFF] — Released position: Should normally be left in this position.
[ON] — Depressed position: Boosts low and high frequencies to give added punch to playback even at low volume.



ADAPTOR/TAPE 2 switch/indicator

Use when there is an adaptor component (graphic equalizer, etc.) or tape deck connected to the ADAPTOR/TAPE 2 terminals.
[OFF] — Released position: When not in use.
[ON] — Depressed position: When using the adaptor component or listening to the tape deck.

NOTE:
When no connections are made to the ADAPTOR/TAPE 2 terminals, or when they are not in use, be sure to set this switch to the OFF position. (No sound will be heard if it is set to the ON position.)

VOLUME control

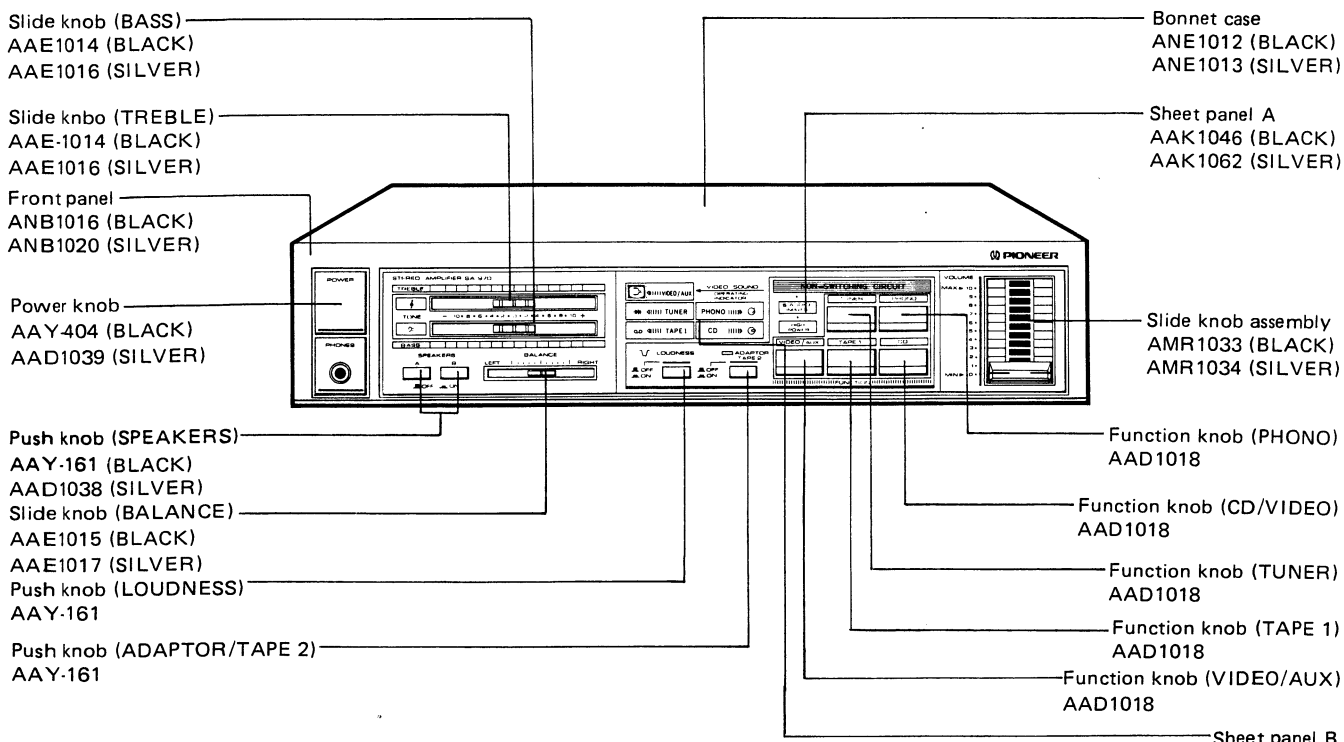
Use to adjust volume level.
Move up to increase volume.
Move down to lower volume.

3. PARTS LOCATION

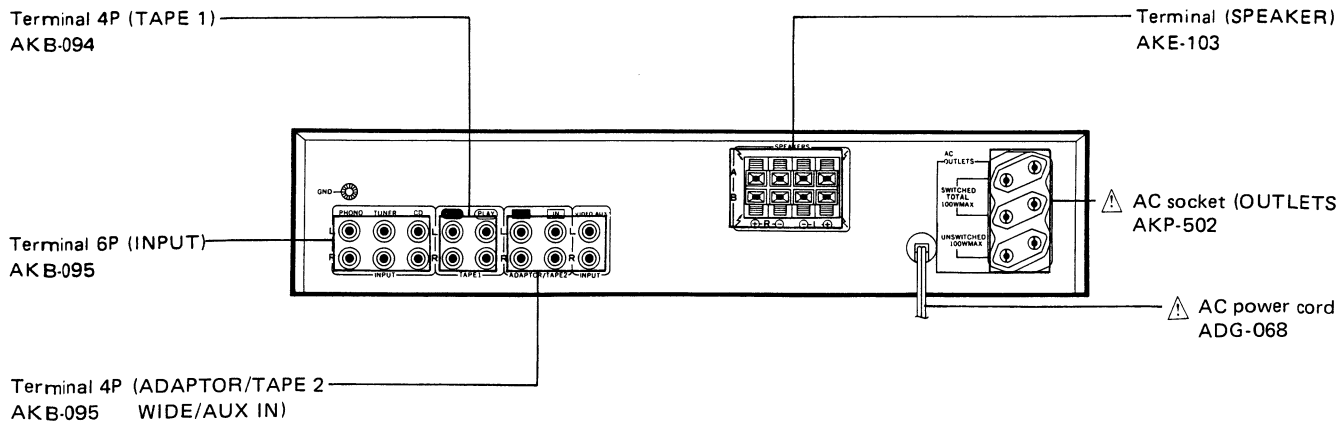
NOTES:

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

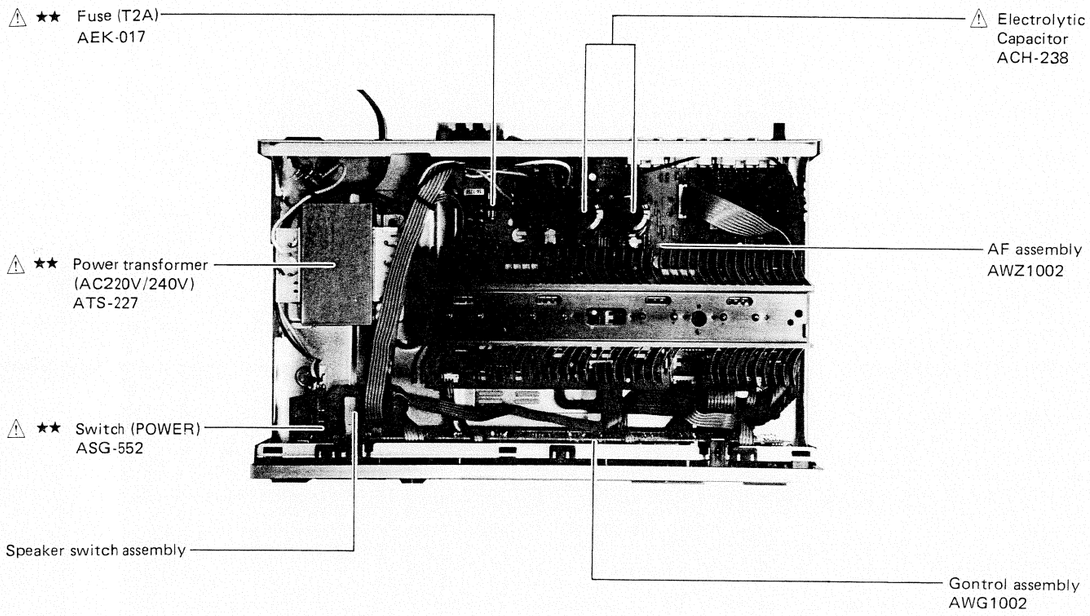
Front Panel View



Rear Panel View

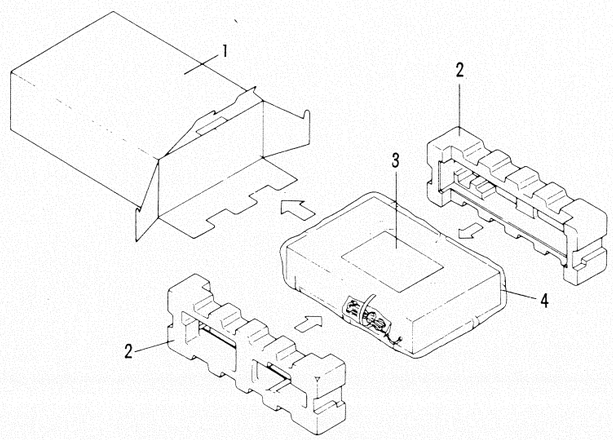


Top View



4. PACKING

Mark	No.	Part No.	Description
	1	AHD1031	Packing case (BLACK)
		AHD1052	Packing case (SILVER)
	2	AHA-340	Front rear pad
	3	ARE1005	Operating instructions (English/German/French/ Italian)
	4		Polyethylene sheet



5. EXPLODED VIEWS

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Parts List

Mark	No.	Part No.	Description
	1	AWG1002	Control assembly
	2	AWZ1002	AF assembly
⚠ ★	3	ATS-227	Power transformer (AC220V/240V)
⚠	4	AKP-502	AC socket (OUTLETS)
⚠ ★★	5	AEK-017	FU1 Fuse (2A)
⚠ ★★	6	AEK-403	FU2 Fuse (T2.5A)
	7	AEC-784	Leg assembly
	8	AAY-404	Power knob (POWER) (BLACK)
		AAD1039	Power knob (POWER) (SILVER)
	9	AAD1018	Function knob
	10	.....	.....
	11	.....	.....
	12	AAE1014	Slide knob (BASS, TREBLE) (BLACK)
		AAE1016	Slide knob (BASS, TREBLE) (SILVER)
	13	AAE1015	Slide knob (B)(BALANCE) (BLACK)
		AAE1017	Slide knob (B)(BALANCE) (SILVER)
	14	AAY-161	Push knob (LOUDNESS, ADAPTOR/TAPE 2)
	15	AAY-161	Push knob (SPEAKERS) (BLACK)
		AAD1038	Push knob (SPEAKERS) (SILVER)
	16	.....	.....
	17	ANE1012	Bonnet case (BLACK)
		ANE1013	Bonnet case (SILVER)
	18	ANB1016	Front panel (BLACK)
		ANB1020	Front panel (SILVER)
	19	AMB1029	Panel base (BLACK)
		AMB1045	Panel base (SILVER)
	20	AAK1046	Sheet panel (A)(BLACK)
		AAK1062	Sheet panel (A)(SILVER)

Mark	No.	Part No.	Description
	21	AAK1047	Sheet panel (B)
	22	AMR1033	Slide knob assembly (BLACK)
		AMR1034	Slide knob assembly (SILVER)
	23	ABH-155	Coil spring
	24	AEC-471	Nylon rivet
	25	AEC-756	Mica sheet
	26	ABA-258	Screw
⚠	27	ADG-068	AC power cord
	28	BBZ30P080FZK	Screw (3 x 8)
	29	PMZ20P030FMC	Screw (2 x 3)
	30	VBZ30P060FMC	Screw (3 x 6)
	31	VMZ30P060FMC	Screw (3 x 6)
⚠ ★★	32	2SA1389	Q2, Q4 Power transistor*
	33	2SC3546	Q1, Q3 Power transistor*
		*hfe of Q1—Q4 should have the same value.	
	34	ASG-552	Push switch (POWER)
	35	ACG-502	C1, C2 Ceramic capacitor (0.01/AC400V)
	101		Base (GND)
	102		Mount plate
	103		Panel stay
	104		Chassis
	105		Bottom plate
	106		Frame
	107		P.C.B. holder
	108		Heat sink
	109		Rear panel
	110		Speaker terminal assembly
	111		Guide shaft
	112		E-ring
	113		Slider
	114		Slide knob L
	115		Blind sheet
	116		Terminal (GND)
	117		Speaker switch assembly
	118		Cushion rubber
	119		Cushion rubber A

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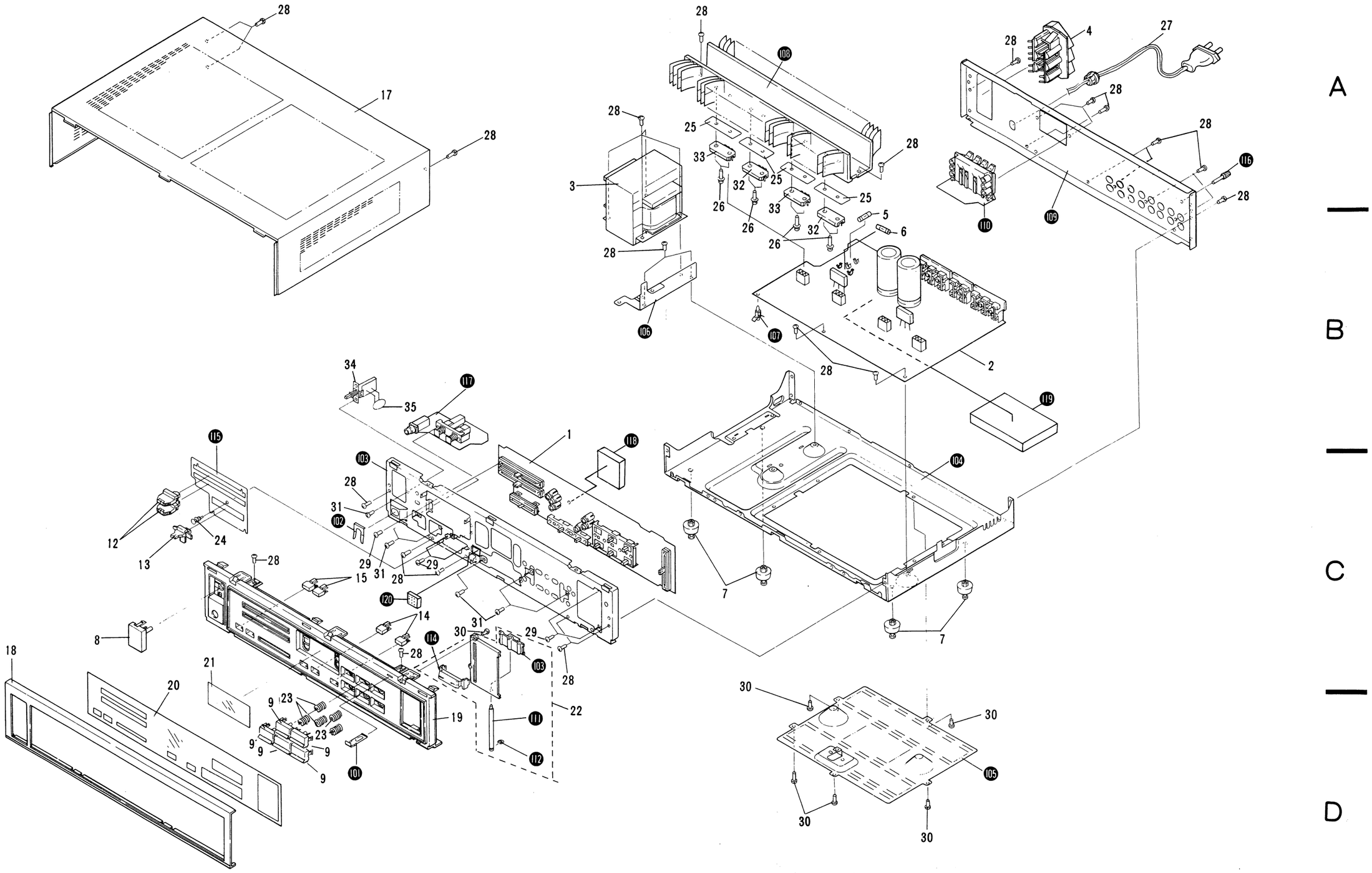
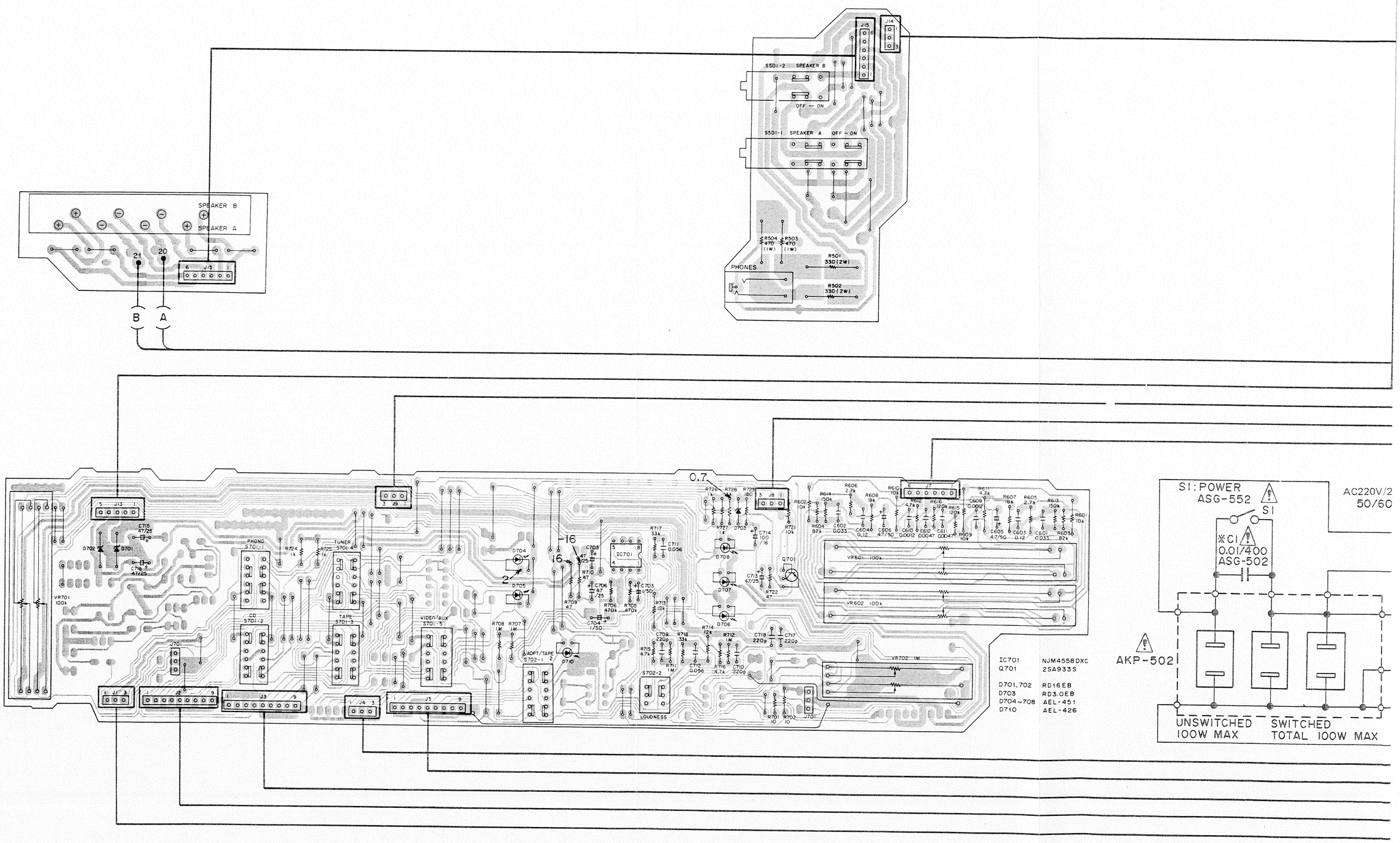


6. P.C.BOARDS CONNECTION DIAGRAM



IC101	M5220P
IC201,202	PA0016
Q101,102	2SC2878
Q201~204	2SA992
Q205~208,301,302	2SC1845
Q209,210,401	2SA1145
Q211,212	2SC2705
Q213,214	2SC2238
Q215,216	2SA968
Q303,304	2SC2603
Q305	2SC3332
D201	RD16EB
D203~206,211~218,	
D301~306	1SS131
D207~210	RD7.5EB
D307,405,406	RD18EB
D401	RB602
D402,403	11E2
D404	RD15EB

AC POWER CORD
ADG-068

LIVE
AC220V/240V
50/60Hz
NEUTRAL

SI: POWER
ASG-552

※C1
0.01/400
ASG-502

※C2
0.01
/400
ACG-502

T1 ATS-227

UNSWITCHED
100W MAX

SWITCHED
TOTAL 100W MAX

FU 1 T2A

FU 2 T2.5A

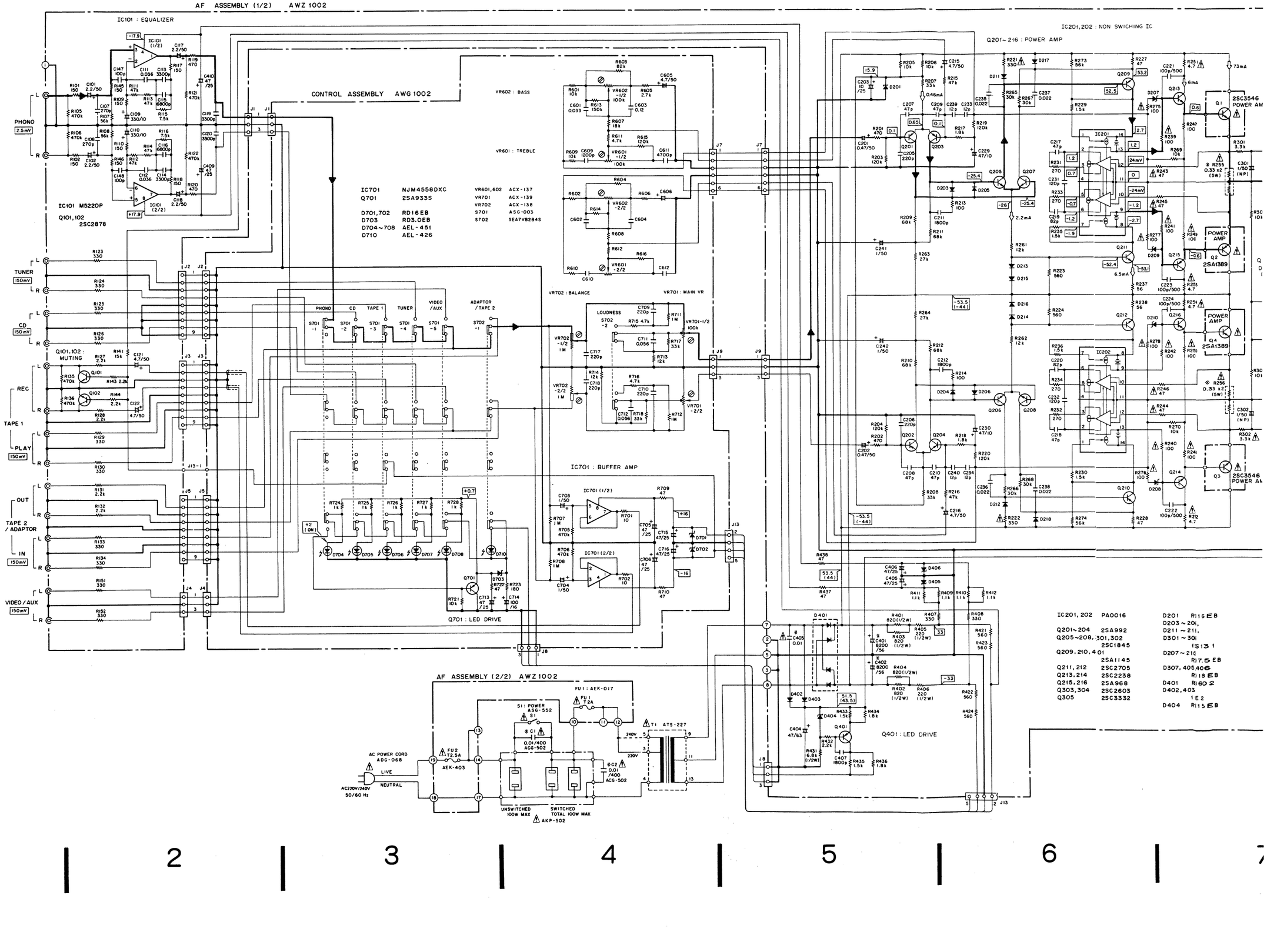
VIDEO/AUX
TAPE 2/ADAPTOR IN
TAPE 2/ADAPTOR OUT
PLAY
TAPE 1 REC
CD/VIDEO
TUNER
PHONO

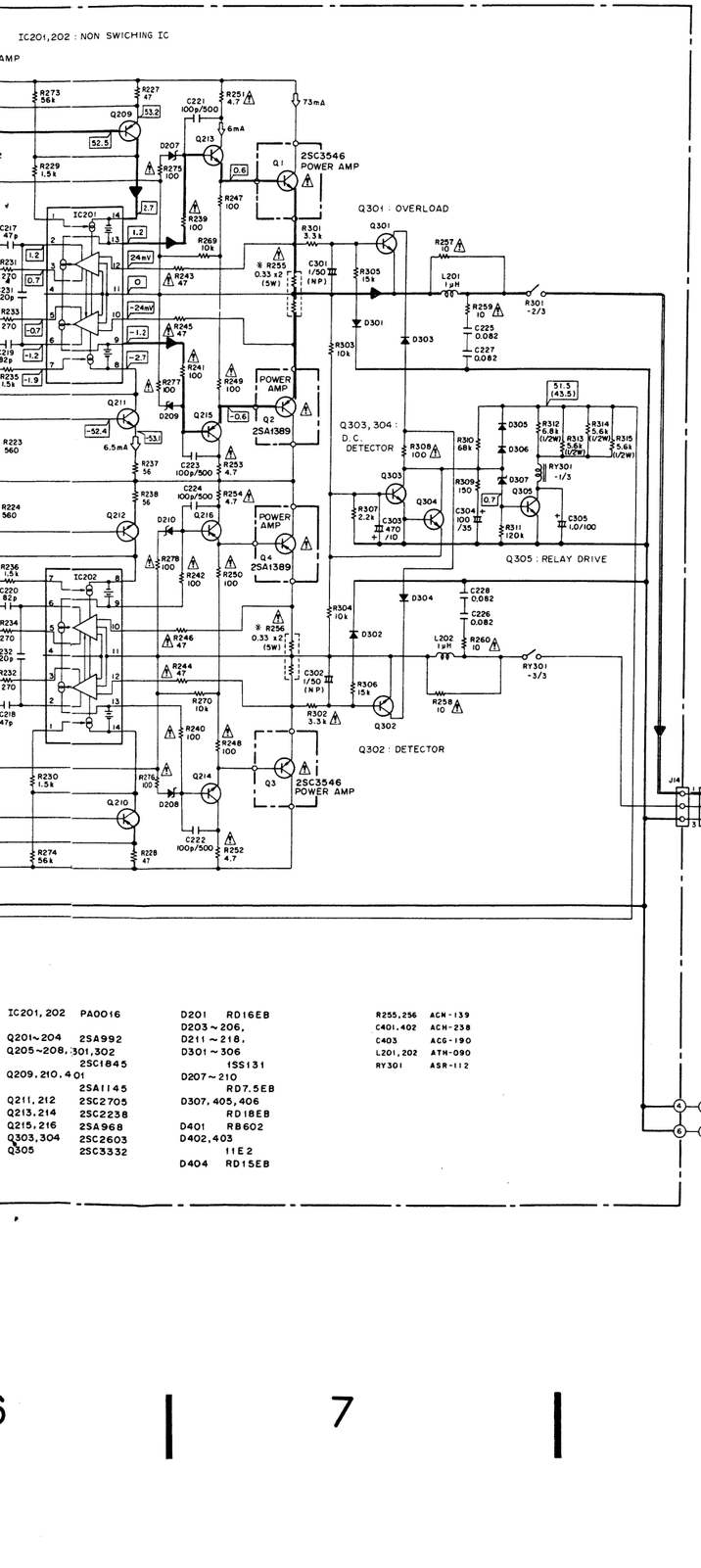
7 8 9 10 11 12

A B C D

7. SCHEMATIC DIAGRAM

SA-970(BK)/HE





1. RESISTORS:
Indicated in Ω, ¼W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M), ±20% tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
Signal voltage at (W + W 8Ω)output (1kHz)
DC voltage (V) at no input signal
Value in ( ) is DC voltage at rated power.
⇦mA : DC current at no input signal

4. OTHERS:
➡ Signal route.
Ⓐ : Adjusting point.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
※ marked capacitors and resistors have parts numbers.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

SPEAKER SW ASSEMBLY
S501-1 : SPEAKER A ON – OFF
S501-2 : SPEAKER B ON – OFF

CONTROL ASSEMBLY
S701-1 : FUNCTION PHONO
S701-2 : FUNCTION CD
S701-3 : FUNCTION TAPE 1
S701-4 : FUNCTION TUNER
S701-5 : FUNCTION VIDEO / AUX
S702-1 : ADAPTOR / TAPE 2
S702-2 : LOUDNESS

OTHER
S1 : POWER ON – OFF

The underlined indicates the switch position.

IC201, 202	PA0016
Q201~204	2SA992
Q205~208, 301,302	2SC1845
Q209, 210, 401	2SA1145
Q211, 212	2SC2705
Q213, 214	2SC2238
Q215, 216	2SA968
Q303, 304	2SC2603
Q305	2SC3332

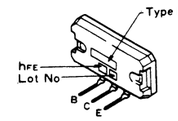
D201	RD16EB
D203~206, D211~218, D301~306	1SS131
D207~210	RD7.5EB
D307, 405, 406	RD18EB
D401	RB602
D402, 403	11E2
D404	RD15EB

R255, 256	ACN-139
C401, 402	ACH-238
C403	ACG-190
L201, 202	ATH-090
RY301	ASR-112

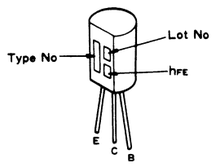
NOTE:
The indicated semiconductors are representative ones only. Other alternative semiconductors may be used and are listed in the parts list.

External Appearances of Transistor and ICs

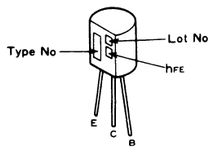
2SA1389 (A)
2SC3546 (A)



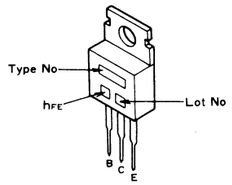
2SA992
2SC1845



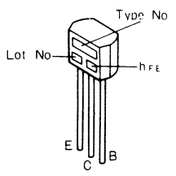
2SA1145
2SC2705
2SC2878



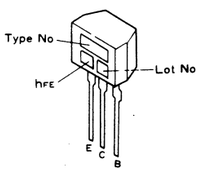
2SC2238
2SA968



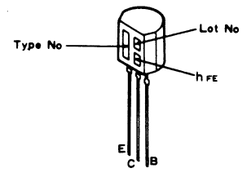
2SC2603



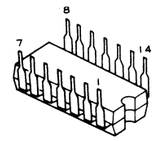
2SC1740S
2SA933S



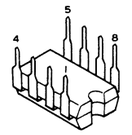
2SC3332



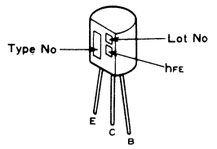
PA0016



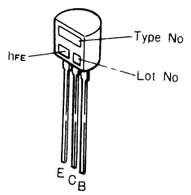
NJM2043DD
NMJ4558DXC
M5220P



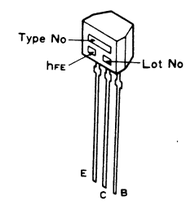
2SC2240



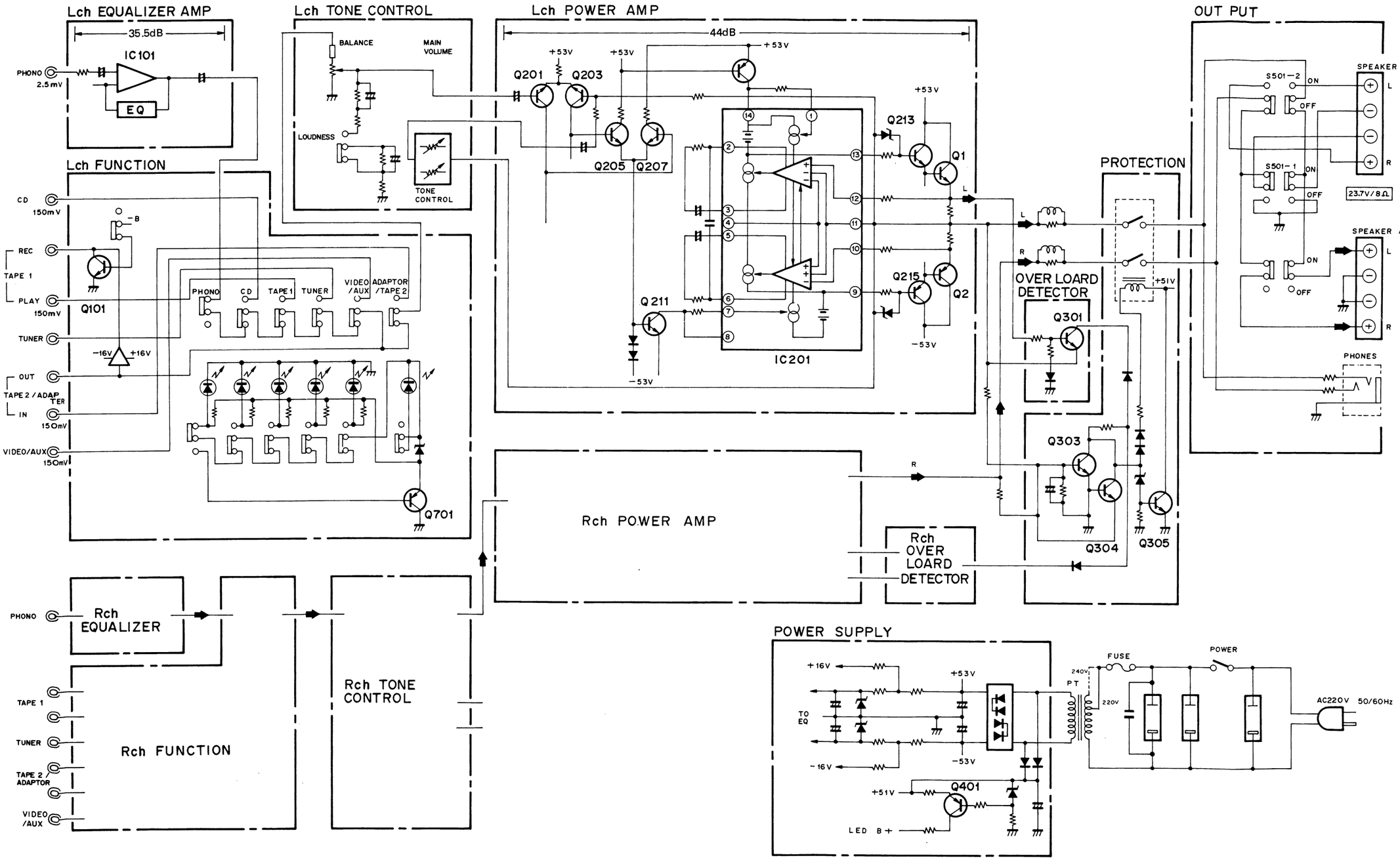
2SC2389



2SC2458
2SA1048



8. BLOCK DIAGRAM



9. ELECTRI

NOTES:

- *When ordering resist*
  Ex. 1 When there
  shown by J
  560Ω
  47kΩ
  0.5Ω
  1Ω
  Ex. 2 When there
  5.62kΩ
- *The ⚠ mark found*
  Therefore, when rep
- *For your Parts Stock*
  ★★ GENERALLY
  This classification s
  humidity, etc.
- *Parts marked by "*
  be unavailable.

Miscellaneous Parts l

P.C. BOARD ASSEMBL

Mark	Symbol & Descri
	AF assembly
	Control assembly
	Speaker switch as
	Speaker terminal

SEMICONDUCTORS

Mark	Symbol & Descri
⚠ ★★	Q2, Q4
⚠ ★★	Q1, Q3
	*hfe of Q1–Q4 s

OTHERS

Mark	Symbol & Descri	
⚠ ★★	C1, C2	Ceramic (0.01/AC
⚠ ★	T1	Power tra (AC220V
⚠ ★		AC Socke
⚠ ★	FU	Fuse (T2
⚠ ★	FU	Fuse (T2
⚠		AC Powe
⚠ ★★	S1	Switch (F

AF Assembly (AWZ

SEMICONDUCTORS

Mark	Symbol & Descri
★★	IC101
★★	IC201 , IC202
★★	Q209, Q210, Q4
★★	Q215, Q216
★★	Q211 – Q204

9. ELECTRICAL PARTS LIST

NOTES:

- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex. 1 *When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).*

560Ω	*56 × 10¹*	*561*	*RD¼PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD¼PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

  Ex. 2 *When there are 3 effective digits (such as in high precision metal film resistors).*

5.62kΩ	*562 × 10¹*	*5621*	*RN¼SR 5 6 2 1 F*

- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ GENERALLY MOVES FASTER THAN ★
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts marked by " ⊙ " are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

Miscellaneous Parts List

P.C. BOARD ASSEMBLIES

Mark	Symbol & Description	Part No.
	AF assembly	AWZ1002
	Control assembly	AWG1002
	Speaker switch assembly	non supply
	Speaker terminal assembly	non supply

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
⚠★★	Q2, Q4	2SA1389(A)-O/R*
⚠★★	Q1, Q3	2SC3546(A)-O/R*

*hfe of Q1–Q4 should have the same value.

OTHERS

Mark	Symbol & Description		Part No.
⚠★★	C1, C2	Ceramic capacitor (0.01/AC400V)	ACG-502
⚠ ★	T1	Power transformer (AC220V/240V)	ATS-227
⚠ ★		AC Socket (OUTLETS)	AKP-502
⚠ ★	FU1	Fuse (T2A)	AEK-017
⚠ ★	FU2	Fuse (T2.5A)	AEK-403
⚠		AC Power cord	ADG-068
⚠★★	S1	Switch (POWER)	ASG-552

AF Assembly (AWZ1002)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC101	M5220P (NJM2043DD)
★★	IC201, IC202	PA0016
★★	Q209, Q210, Q401	2SA1145
★★	Q215, Q216	2SA968
★★	Q201 – Q204	2SA992
★★	Q205 – Q208, Q301, Q302	2SC1845 (2SC2240) (2SC2389)
★★	Q213, Q214	2SC2238
★★	Q303, Q304	2SC2603 (2SC1740S) (2SC2458)
★★	Q211, Q212	2SC2705
★★	Q101, Q102	2SC2878
★★	Q305	2SC3332
★	D401	RB602
★	D404	RD15EB (HZ15EB)
★	D201	RD16EB (HZ16EB)
★	D307, D405, D406	RD18EB (HZ18EB)
★	D207 – D210	RD7.5EB (HZ7.5EB)
★	D203–D206, D211–D218, D301–D306	1SS131
★	D402, D403	11E2 (S5566)

CAPACITORS

Mark	Symbol & Description	Part No.
⚠	C403 Ceramic capacitor	ACG-019
	C401, C402 Electric (8200/56V)	ACH-238
	C147, C148	CCCSL101J50 (CCDSL101J50)
	C221 – C224	CCCSL101K500 (CCDSL101K500)
	C233, C234, C239, C240	CCCSL120J50 (CCDSL120J50)
	C231, C232	CCCSL121J50 (CCDSL121J50)
	C205, C206	CCCSL221J50 (CCDSL221J50)
	C107, C108	CCCSL271J50 (CCDSL271J50)
	C207 – C210, C217, C218	CCCSL470J50 (CCDSL470J50)
	C219, C220	CCCSL820J50 (CCDSL820J50)
	C101, C102	CEANL2R2M50
	C301, C302	CEANP010M50
	C201, C202	CEASR47M50
	C305	CEAS010M100
	C241, C242	CEAS010M50
	C203	CEAS100M25
	C304	CEAS101M35
	C117, C118	CEAS2R2M50
	C109, C110	CEAS331M10
	C121, C122, C215, C216	CEAS4R7M50
	C229, C230	CEAS470M10
	C405, C406, C409, C410	CEAS470M25
	C404	CEAS470M63
	C303	CEAS471M10
	C211, C212, C407	CKCYB182K50 (CKDYB182K50)
	C235 – C238	CKCYF223Z50 (CKDYF223Z50)
	C113, C114, C119, C120	CQMA332J50
	C111, C112	CQMA363J50
	C115, C116	CQMA682J50
	C225 – C228	CQMA823K50 (CQMA823J50)

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
⚠	R255, R256 (0.33Ω x 2)(5W)	ACN-139
	R312 – R315, R401 – R406, R431	RD1/2PM □□□J
⚠	R257 – R260, R301, R302	RD1/4PMFL □□□J
⚠	R221, R222, R239–R254, R275–R278, R308	RFA1/4PS□□□J
	R101, R102, R105–R136, R141, R143–R146, R151, R152, R201–R204, R209–R216, R219, R220, R223, R224, R227–R238, R307, R310, R311, R437, R438	RD1/8PM□□□J
	Other resistors	RD1/4PM □□□J

OTHERS

Mark	Symbol & Description		Part No.
	L201, L202	Inductor (1μH)	ATH-090
★★	RY301	Relay	ASR-112 (ASR-107)
	Terminal (4P) (TAPE1)		AKB-094
	Terminal (6P) (INPUT, TAPE2, VIDEO/AUX)		AKB-095
	Transistor socket		AKH-017

Speaker Switch Assembly

RESISTORS

Mark	Symbol & Description	Part No.
⚠	R503, R504	RS1PMF471J (RS1LMF471J)
⚠	R501, R502	RS2LMF331J

SWITCH

Mark	Symbol & Description		Part No.
★★	S501	Push switch (SPEAKER)	SUL8MYXSC

OTHERS

Mark	Symbol & Description	Part No.
	Jack (PHONES)(8P)	AKN-045

Speaker Terminal Assembly

OTHERS

Mark	Symbol & Description	Part No.
	Terminal (SPEAKER)	AKE-103

Control Assembly (AWG1002)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★★	IC701	NJM4558DXC
★★	Q701	2SA933S (2SA1048)
★	D704–D708	AEL-451
★	D710	AEL-426
★	D701, D702	RD16EB (HZ16EB)
★	D703	RD3.0EB (HZ3.0EB)

CAPACITORS

Mark	Symbol & Description	Part No.
	C709, C710, C717, C718	CCCSL221J50 (CCDSL221J50)
	C703, C704	CEAS010M50
	C714	CEAS101M16
	C605, C606	CEAS4R7M50
	C705, C706, C713, C715, C716	CEAS470M25
	C609, C610	CQMA122K50
	C603, C604	CQMA124K50
	C601, C602	CQMA333K50
	C611, C612	CQMA472K50
	C711, C712	CQMA563K50

RESISTORS

Note: When ordering resistors, convert the resistance value into code form, and then rewrite the part no. as before.

Mark	Symbol & Description	Part No.
★	VR601, VR602 (TREBLE, BASS)	ACX-137
★	VR702 (BALANCE)	ACX-138
★	VR701 (MAIN)	ACX-139
	R601, R602, R609, R610, R709, R710	RD1/4PM □□□J
	Other resistors	RD1/8PM □□□J

SWITCHES

Mark	Symbol & Description		Part No.
★★	S701	Push switch (FUNCTION)	ASG1003
★★	S702	Push switch (ADAPTOR/ TAPE2 LOUDNESS)	SEA7VB2B4S